Trend Study 25A-13-99

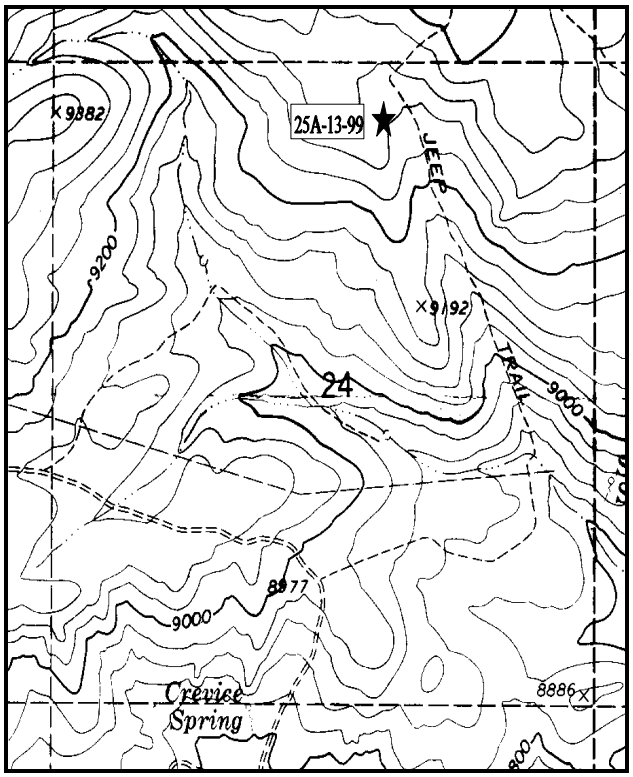
Study site name: Ox Spring . Range type: Burn .

Compass bearing: frequency baseline 165°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

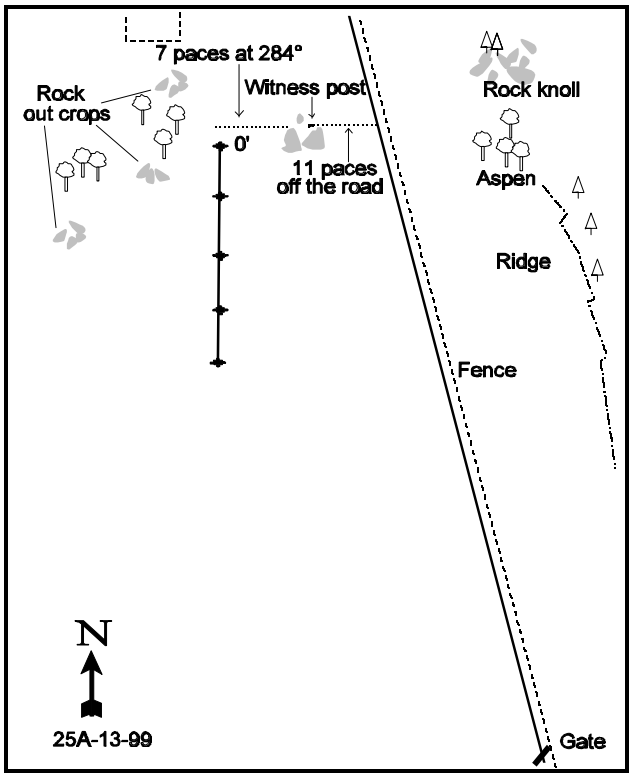
LOCATION DESCRIPTION

Turn west off of SR 72 onto the Mill Meadow Road north of Fremont. Go past the lake and up the Johnson Reservoir Road for 3.8 miles. Turn west off the paved road and go 1.1 miles to a cattleguard at the head of Cedarless Flat. Continue 0.6 miles to a fork in the road. Go right for 1.75 miles to the Ox Spring trail turnoff. Stay left (on the main road) for 1.15 miles to another cattleguard. Go another 1.05 miles to the Briggs Hollow turnoff. Stay right for 0.35 miles, turn right off the Mytoge Road, and go 0.5 miles to a gate. Drive another 0.85 miles (passing through two more gates) to a witness post among some rocks,11 paces off the left (west) side of the road. From the witness post, the white-topped 0 foot baseline stake is 7 paces away at an azimuth of 284°M.



Map Name: Fish Lake, Utah

Township 26S , Range 2E , Section 24



Diagrammatic Sketch

UTM 4266169.993 N, 444051.066 E

DISCUSSION

Trend Study No. 25A-13 (44-7)

The Ox Spring site is a new study first read in 1991 near Ox Spring. It samples a prescribed burn on a high elevation mountain big sagebrush type with a 10-12% south-facing slope and an elevation of 9,300 feet. The land is administered by the U.S. Forest Service. The area is grazed by cattle during the summer as part of the UM allotment which is used in the spring. Pellet group data from a nearby Division pellet group transect estimated 19 deer and 46 elk days use/acre in 1991 (46 ddu/ha, 114 edu/ha). Elk use appeared heavy in the spring of 1991. An exclosure nearby is used to monitor spring elk utilization. Pellet group data taken along the study site baseline in 1999 estimate 9 deer, 97 elk and 25 cow days use/acre (22 ddu/ha, 240 edu/ha, and 62 cdu/ha). All of the cattle pats appeared to be from last season. Most elk pellet groups seemed to be from the spring.

The soil is moderately deep with an effective rooting depth of over 16 inches. It has a loam texture with a neutral pH (7.3). The soil is dark in color and fertile with a relatively high organic matter content of 5.2%. The surface horizon contains a high percentage of gravel sized rock fragments. Litter and pavement cover most of the bare areas leaving little exposed bare ground. Erosion does not appear to be a problem on this site due to uniform distribution of vegetation and litter cover.

The browse consists of mostly sprouting shrubs: woods rose, Oregon grape, and snowberry. Rabbitbrush was the most numerous species with an estimated 12,466 plants/acre, with light to moderate use 1991. Density declined to 7,240 plants/acre in 1999, due in part to the much larger sample now used which gives much more accurate estimates for browse species. The population is currently (‘99) mostly mature with young plants making up 13% of the population. Mature plants have doubled in number since 1991. Utilization was moderate in 1991, but there was little sign of use in 1999. Some mountain big sagebrush and rubber rabbitbrush were encountered in 1999 with the larger sample size.

The site is dominated by native grasses and forbs which currently (‘99) provide 72% of the total vegetation cover. The most numerous grass is mutton bluegrass which accounts for 45% of the grass cover. Other common species include bottlebrush squirreltail, prairie Junegrass, Carex, pinewoods needlegrass, and bluebunch wheatgrass. There were 25 species of forbs sampled in 1991 and 20 in 1999. The more common forbs include Watson penstemon, Lupine, aster, and rose pussytoes.

1991 APPARENT TREND ASSESSMENT

Overall, the soil trend appears stable. No recent erosion was evident and no active gullies occur on the site. Vegetation and litter cover appear sufficient to hold the soil in place. The only desirable browse, stickyleaf low rabbitbrush, has a large population with a good percentage of young plants. Native grasses and forbs are diverse and abundant.

1999 TREND ASSESSMENT

Trend for soil is stable. Percent cover of bare ground has declined but litter cover has also declined. There does not appear to be any problem with erosion on this site. Trend for browse is up slightly. Density of the increaser, stickyleaf low rabbitbrush has declined, while density of the more preferred mountain big sagebrush and white-stemmed rubber rabbitbrush have increased. However, shrubs are not the most important component on this site. Trend for the herbaceous understory is down slightly overall. Sum of nested frequency for grasses increased slightly, although frequency of forbs declined substantially. It appears that forb abundance is declining after a flush of growth following the fire.

TREND ASSESSMENT
soil - stable
browse - up slightly
herbaceous understory - up slightly for grasses, down for forbs, down slightly overall

HERBACEOUS TRENDS --
Herd unit 25A, Study no: 13

Type	Species	Nested Frequency '91	'99	Quadrat Frequency '91	'99	Average Cover % '99
G	Agropyron spp.	110	*-	47	-	-
G	Agropyron spicatum	-	*85	-	35	2.27
G	Agropyron trachycaulum	-	*48	-	18	.72
G	Bromus anomalus	-	*38	-	17	.60
G	Carex spp.	75	94	25	31	2.68
G	Koeleria cristata	129	125	54	45	2.82
G	Poa fendleriana	258	275	95	90	10.56
G	Sitanion hystrix	138	*102	55	45	1.87
G	Sporobolus cryptandrus	-	1	-	1	.03
G	Stipa comata	-	4	-	1	.03
G	Stipa pinetorum	78	65	35	-	1.81
Total for Annual Grasses		0	0	0	0	0
Total for Perennial Grasses		788	837	311	308	23.44
Total for Grasses		788	837	311	308	23.44
F	Agoseris glauca	74	*-	29	-	-
F	Antennaria rosea	105	124	46	49	5.07
F	Androsace septentrionalis (a)	-	84	-	38	.44
F	Arabis spp.	37	*-	18	-	-
F	Arabis drummondi	10	*-	6	-	-
F	Astragalus argophyllus	12	*-	6	-	-
F	Aster chilensis	80	*15	32	7	.30
F	Astragalus serpens	17	*-	11	-	-
F	Aster spp.	18	37	10	16	1.27
F	Astragalus spp.	6	*38	2	16	.22
F	Castilleja chromosa	6	-	2	-	-
F	Castilleja linariaefolia	4	7	2	4	.07
F	Crepis acuminata	41	*5	22	4	.02
F	Erigeron eatonii	18	*-	8	-	-
F	Erigeron pumilus	-	*8	-	3	.09
F	Eriogonum racemosum	57	74	25	30	1.66
F	Eriogonum umbellatum	8	6	5	5	.08

Type	Species	Nested Frequency '91	'99	Quadrat Frequency '91	'99	Average Cover % '99
F	Fritillaria atropurpurea	21	*-	10	-	-
F	Lotus utahensis	13	26	10	13	.50
F	Lupinus spp.	116	109	50	48	3.48
F	Lychnis drummondii	-	*9	-	5	.07
F	Machaeranthera canescens	1	2	1	1	.03
F	Penstemon watsonii	131	63	58	26	1.88
F	Phlox austromontana	4	-	2	-	-
F	Phlox longifolia	97	*-	48	-	-
F	Potentilla concinna	3	9	2	3	.33
F	Taraxacum officinale	69	79	28	40	1.31
F	Tragopogon dubius	-	1	-	1	.03
F	Unknown forb-perennial	2	-	1	-	-
F	Viguiera multiflora	-	1	-	1	.00
Total for Annual Forbs		0	84	0	38	0.43
Total for Perennial Forbs		950	613	434	272	16.46
Total for Forbs		950	697	434	310	16.90

* Indicates significant difference at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25A, Study no: 13

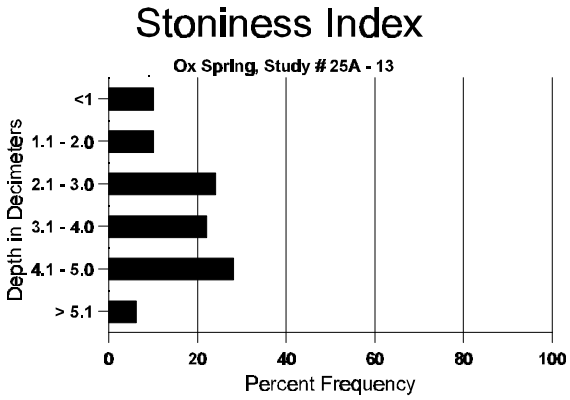
Type	Species	Strip Frequency '99	Average Cover % '99
B	Artemisia tridentata vaseyana	5	-
B	Chrysothamnus nauseosus	24	.87
B	Chrysothamnus viscidiflorus viscidiflorus	88	13.89
B	Cowania mexicana stansburiana	0	-
B	Mahonia repens	2	.06
B	Rosa woodsii	6	.09
B	Symphoricarpos oreophilus	13	1.01
B	Tetradymia canescens	0	-
Total for Browse		138	15.93

BASIC COVER --
Herd unit 25A, Study no: 13

Cover Type	Nested Frequency ⅈ99	Average Cover % '91	'99
Vegetation	373	17.00	56.81
Rock	188	7.00	5.75
Pavement	258	14.50	12.86
Litter	375	45.25	35.65
Cryptogams	-	0	0
Bare Ground	238	16.25	9.22

SOIL ANALYSIS DATA --
Herd Unit 25A, Study # 13, Study Name: Ox Spring

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
16.5	55.2 (16.5)	7.3	33.3	43.4	23.3	5.2	20.5	428.8	0.7



PELLET GROUP FREQUENCY --
Herd unit 25A, Study no: 13

Type	Quadrat Frequency ⅈ99	Pellet Transect Days Use/Acre (ha) ⅈ99
Rabbit	4	n/a
Horse	1	0
Elk	57	97(240)
Deer	7	9(22)
Cattle	8	25(62)

BROWSE CHARACTERISTICS --
Herd unit 25A, Study no: 13

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	22	38	4
X	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	3260			163

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'91	0	Dec:		-
'99	160			-

Chrysothamnus nauseosus																		
M	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	46	2	-	-	-	-	-	-	-	48	-	-	-	960	9	14	48

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'91	00%	00%	00%	
'99	04%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'91	0	Dec:		-
'99	960			-

Chrysothamnus viscidiflorus viscidiflorus																		
Y	91	54	34	9	6	-	-	1	-	-	104	-	-	-	6933			104
	99	46	-	-	-	-	-	-	-	-	46	-	-	-	920			46
M	91	24	43	6	5	3	-	-	-	-	81	-	-	-	5400	5	10	81
	99	310	-	-	-	-	-	-	-	-	310	-	-	-	6200	13	21	310
D	91	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	99	6	-	-	-	-	-	-	-	-	1	-	1	4	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'91	43%	08%	00%	-42%
'99	00%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'91	12466	Dec:		1%
'99	7240			2%

Cowania mexicana stansburiana																		
M	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	17	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'91	0	Dec:		-
'99	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Mahonia repens																		
Y	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	8	-	-	-	-	-	-	-	-	8	-	-	-	160	3	6	8
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'91	00%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'91		0	Dec:		-
													'99		260			-
Rosa woodsii																		
Y	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180	9	9	9
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'91	00%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'91		0	Dec:		-
													'99		260			-
Symphoricarpos oreophilus																		
Y	91	-	7	-	-	-	-	-	-	-	7	-	-	-	466			7
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
M	91	-	-	2	1	-	-	-	-	-	3	-	-	-	200	6	10	3
	99	13	-	-	2	-	-	-	-	-	15	-	-	-	300	19	32	15
D	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'91	70%		20%		00%									-34%			
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'91		666	Dec:		0%
													'99		440			5%
Tetradymia canescens																		
Y	91	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'91	100%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'91		66	Dec:		-
													'99		0			-